Remarks

Claims 25, 29-31, 33, 34, 37, 40, and 41 are pending in the subject application and presently before the Examiner for her consideration.

In Section 2 of the Advisory Action dated May 17, 2004, the Examiner indicates that Applicant's Amendment submitted February 2, 2004 will not be entered because it raises new issues that would require further consideration and/or search. Specifically, the Examiner indicates that while claim 25 recites that the second region "consists of a protein," the dependent claims (claims 29-31, 33, and 34) recite that the second region "comprises" an additional element or thing and, therefore, fails to further limit parent claim 25. Applicant respectfully asserts that the amendments presented in the February 2 Amendment complied with the requirements set forth in the previous Office Action so as to place the application in condition for allowance and did not raise new issues that required further search and/or consideration.

Applicant respectfully asserts that the dependent claims do further limit claim 25. In this regard, Applicant respectfully submits that there is a difference between a dependent claim which adds a further element and a dependent claim which modifies or further limits an existing element. Dependent claims 29-31, 33, and 34 of the subject application are of the latter type. It is entirely consistent with accepted practices of claim drafting and claim construction to have a first claim that recites the "consisting of [an element]" language and then have claims that depend from the first claim that recite the element "comprises" a particular limitation or modification of the element. For example, a claim might recite that support means for a table "consists of" four legs. It is perfectly acceptable to have a dependent claim that recites that the four legs "comprise" a rectangular section or a cylindrical section or both a rectangular section and a cylindrical section. Similarly, the four legs can "comprise" wheels or hinges or other limitations. The "consisting of" language only limits that the table can only have four legs. The table cannot have two or three legs, and not six or seven legs, *etc.*; however, the four legs can "comprise" a particular modification or limitation. Thus, the four legs of the table can comprise other elements or modifications and still be consistent with the "consisting of" language.

For the Examiner's convenience, Applicant has attached herewith a copy of the claims of U.S. Patent No. 4,207,060. Independent claim 1 in the '060 patent recites a vessel having "(a) at

least a portion of the interior wall of said vessel above the smelting zone consisting of at least one cooling pipe coil . . .." Dependent claims 2 and 3 of the '060 patent recite "(a) said cooling pipe coil comprising ...." This is the same transitional claim language and format that the Examiner has indicated in the subject application does not further limit independent claim 25. Applicant further notes that the validity of the claims in the '060 patent was upheld in the decision *Mannesmann Demag Corp. v. Engineered Metal Products Co., Inc.*, 230 USPQ 45 (Fed. Cir. 1986).

In the specific claims at issue in the subject application, part (b) of claim 25 recites that the second region "consists of a protein of at least 100 amino acids." This means that the second region must be a protein of at least 100 amino acids; however, the "consisting of" language does not further limit what the protein of at least 100 amino acids can comprise. For example, the protein could comprise both a DNA binding domain, or a regulatory protein region, or both, as long as the protein consisted of at least 100 amino acids. The second region would still be limited to a protein consisting of at least 100 amino acids; however, in the dependent claims, the protein of at least 100 amino acids is further defined by additional limitations on the protein of at least 100 amino acids.

Applicant also notes that the dependent claims which have the comprising language do not recite that the second region comprises anything other than a protein, *i.e.*, the dependent claims do not recite that the second region comprises, for example, a carbohydrate or a nucleic acid moiety. Thus, claim 25, as amended by Applicant's Amendment dated February 2, 2004 means that the second region of the claimed conjugate can comprise many elements or limitations as long as the second region "consists of" a protein of at least 100 amino acids.

Applicant further notes that the Amendment dated February 2, 2004 was submitted in a sincere effort to comply with the Examiner's remarks in the previous Office Action in order to place the application in condition for allowance. However, the February 2 Amendment was apparently lost at the Patent Office and, therefore, Applicants had to re-submit a copy of the February 2 Amendment to the Examiner by facsimile on April 1, 2004. Several more weeks passed before the Advisory Action dated May 17 was mailed out to Applicant. Thus, several months passed, at no fault of the Applicant, before Applicant's February 2 Amendment was acted on by the Patent Office. Accordingly, reconsideration and entry of the amendments to claim 25 and the allowance of the subject application is respectfully requested.

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In view of the foregoing remarks and amendments to the claims, Applicant believes that the currently pending claims are in condition for allowance, and such action is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 CFR §§1.16 or 1.17 as required by this paper to Deposit Account No. 19-0065.

Applicant invites the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephonic interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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Attachment: Copy of the claims of U.S. Patent No. 4,207,060

with refractory bricks. The upper edges of the coils are positioned just below the upper vessel edge 15.

Naturally, the cooling coils may be arranged in such a fashion that the adjoining pipe pieces run parallel with the furnace vessel axis or the pipe coil forming the vessel wall may consist of a helically coiled pipe. To advantage, the cooling coils may be installed in existing plants after slight alterations to the furnace vessel.

FIGS. 4*a* and 4*b* show the side-by-side relation of adjacent cooling pipe coils 1. In order to avoid overheating at outer shell 9 in the areas of the gaps between neighboring cooling coils, such gaps being small but inevitable due to structural requirements, a pile of refractory bricks 16 is positioned in the gap area according to FIG. 4*a*. A modified solution of heat screening in the gap area is shown on FIG. 4*b*, whereby the down pipe 4 (see FIG. 2 as well) is arranged so that it straddles the gap. If the cooling coils are wound vertically, as illustrated in FIG. 4*c*, the individual cooling coils may be arranged very close together so that no additional heat screening of outer shell 9 is required.

FIG. 5 shows an example of a monitoring system for the cooling system. The cooling system operates in accordance with the principle of a forced flow for the cooling fluid, whereby the water requirement is 7 to 9 m^3 per m^2 of supplied surface. If the water inlet temperature is between 15° to 30° C., the outlet temperature will be slightly over 60° C. to 65° C. at a water pressure of 4 to 5 bar. The flow velocity is approximately 2 to 4 m/sec. Normal cooling water may be used as cooling medium. In the example shown on FIG. 5 three cooling coils (pipe wall elements) 1 are connected to the cooling medium circulation system. The cooling water supply line 21 is provided at the inlet with a check valve 17. The lines for each cooling coil 1 are each provided with a check valve 17. At the cooling water supply line the temperature is measured by a temperature gage 18 and the pressure of the cooling water is measured by pressure gage 19. Furthermore, a flowmeter 20 is installed in the supply line operating in conjunction with an alarm system which triggers an alarm if a minimum value is not reached. The cooling water discharge line 25 and/or the connecting lines between cooling pipe coils and discharge line 25 are each supplied with a temperature gage 22 as well as a flow guard 23. The guard monitors the volume flow; if it falls short of a set minimum value a signal is triggered and/or the furnace is shut down. This is to avoid starting the furnace if, for example, control or check valves are locked. In the direction of the cooling medium flow following each flow guard 23 a pressure-relief valve 24 is provided with set threshold of response of about 6 bar to blow off steam when exceeding the set pressure; also, a check valve 17 is provided. Before the cooling water leaves the system, a temperature gage 26 is provided. If the water temperature exceeds a predetermined value (about 65° C.) an alarm is triggered. Either the furnace capacity is to be lowered or water flow in the cooling pipe coils must be increased.

The monitor system described guarantees a high degree of safety in furnace operation by constantly monitoring the operation of the cooling system. The safety is still increased—as already mentioned—by using thick-walled pipes on the vessel wall thus eliminating the risk of damage through overheating. The arrangement of the pipe wall above the slag level (FIG. 3) avoids any contact between the liquid smelt and pipes, thus preventing any damage. Nevertheless, should a sudden leak occur in the cooling system, the leaking water would first be directed to the outside by means of the drain 8 (FIG. 2) so that it does not flow behind the brick lining. If operation is performed with water under high pressure, the water would evaporate immediately in the event of a sudden leak before ever touching the metal bath.

FIG. 6 shows a lid for a furnace, of the above-described type. The lid consists of an outer ring 30 and inner ring 35 connected by means of cantilevers 32. Between the two annular supports 30 and 35 segment-like cooling coils 33 are provided which are attached to the rings by means of suspensions 34. Cooling coils 33, being of identical or similar shape as the cooling coils 1 forming the vessel wall (FIG. 1), are advantageous for manufacturing reasons. The space between inner annular support 35 and electrodes is filled by refractory lining, which is arranged around the electrodes in the usual manner.

I claim:

1. A vessel for a metal smelting furnace having a smelting zone including a heat-resistant interior wall, and cooling means for protecting the interior of said vessel, characterized by

(a) at least a portion of the interior wall of said vessel above the smelting zone consisting of at least one cooling pipe coil;

(b) said coil including fluid passage-forming sections;

(c) said cooling pipe coil being exposed to the center of the vessel, and

(d) neighboring sections of said coil being arranged in a contacting relation.

2. The cooling means of claim 1, further characterized by

(a) said cooling pipe coil comprising a plurality of U-shaped pipes.

3. The cooling means according to claim 1, further characterized by

(a) said cooling pipe coil comprising helically coiled pipes.

4. The cooling means according to claim 1, further characterized by

(a) said vessel including a central axis;

(b) the longitudinal axis of said fluid passage-forming sections being arranged in a parallel relation to the central axis of said vessel.

5. The cooling means according to claim 1, further characterized by

(a) said vessel including a central axis;

(b) the longitudinal axis of said fluid passage-forming sections being arranged in a perpendicular relation to the central axis of said vessel.

6. The cooling means according to claim 1, further characterized by

(a) said fluid passage-forming sections comprising individual pipe sections.

7. The cooling means according to claim 6, further characterized by

(a) each of said pipe sections being connected along its length to the neighboring pipe sections of said cooling pipe coil by a welded joint.

8. The cooling means of claim 6, further characterized by

(a) each of said pipe sections comprising an open-ended, longitudinally elongated pipe, and

(b) means interconnecting the open ends of two closely adjacent pipes and providing flow communication therebetween.

9. The cooling means of claim 8, further characterized by

(a) said interconnecting means comprising a hollow U-shaped cap element.

10. The cooling means according to claim 1, further characterized by

(a) said cooling pipe coil being connected at one end thereof to a cooling fluid supply line and at the other end thereof to a cooling fluid discharge line.

11. The cooling means according to claim 10, further characterized by

(a) said cooling fluid supply and discharge lines being at least partially formed by at least one downwardly extending pipe.

12. The cooling means according to claim 1, further characterized by

(a) one surface of said cooling pipe coil including a plurality of projections.

13. The cooling means according to claim 12, further characterized by

(a) said projections comprising burls.

14. The cooling means according to claim 1, further characterized by

(a) means for circulating a cooling fluid through said cooling pipe coil under high pressure.

15. The cooling means according to claim 14, further characterized by

(a) said cooling fluid comprising water.

16. The cooling means according to claim 1, further characterized by

(a) said cooling pipe coil including a drain channel mounted along the lowermost end thereof.

17. The cooling means of claim 16, further characterized by

(a) a trench-like channel associated with said drain channel and arranged immediately below said drain channel.

18. The cooling means of claim 1, further characterized by

(a) said interior wall consisting of a plurality of cooling pipe coils, and

(b) a plurality of girders forming a wall skeleton to support said cooling pipe coils.

19. The cooling means according to claim 18, further characterized by

(a) said plurality of cooling pipe coils being mounted to said vessel in an array generally adapted to the internal configuration of said vessel.

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